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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/810,395	03/26/2004	Ki-Ook Park	139-048U	8978

23429 7590 02/21/2007  
GREGORY SMITH & ASSOCIATES  
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NEWARK, CA 94560

EXAMINER
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EVANS, JEFFERSON A

ART UNIT	PAPER NUMBER
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2627

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/21/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/810,395

Applicant(s)

PARK, KI-OOK

Examiner

Jefferson A. Evans

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17, 25-27, 31, 32 and 34-57 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8, 11-17, 25-27, 31, 32 and 34-57 is/are rejected.
- 7) ☒ Claim(s) 9 and 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

Claims 1-17, 25-27, 31, 32, and 34-57 are pending.

***Election/Restrictions***

1. Applicant's election without traverse of Species Six, figures 6B and 6C, in the reply filed on 11-13-2006 is acknowledged. Applicant has cancelled the claims not corresponding to the elected species.

***Claim Rejections - 35 USC § 112***

2. Claims 11, 12, 17, 31, 32, and 51-54 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 11 does not establish a frame of reference for the angle. Claim 17 appears to be a duplicate of claim 13. Claim 31 depends from a canceled claim. Claim 51 depends from claim 52 but the preambles don't match up and the phrase "said actuator arms" lacks proper antecedent basis. Claim 52 – should this claim be a dependent claims? As is, the phrases "said actuator assembly" and "said actuator pivot" lack proper antecedent basis.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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4. Claims 1-3, 5, 8, 11-17, 25-27, 31, 32, 34-41, and 46-57 are rejected under 35 U.S.C. 102(b) as being anticipated by Boutaghou et al (U.S. 6,055,127). Note figures 6 and 12, column 5 – lines 20 to 26, and raised features 130 that will mirror in shape and position the trenches 80 and 84 shown in figure 6. Figure 12 and column 5 – lines 30 to 35 indicate that the deflection rails will have a height less than a depth of the negative pressure pocket 64. The Examiner's position is that the left and right deflection rails of Boutaghou will inherently diminish negative air pressure and experience an airflow therebetween. There are multiple left deflection rails and multiple right deflection rails such that which rail is considered to be the left deflection rail or the right deflection rail can be set such that the language of both claims 15 and 16 can be met. The same is true when it comes to comparing left and right deflection rail lengths as both the left deflection rails and the right deflection rails include rails of different lengths. The deflection rails would be capable of deflecting a particle from the central head island of the slider as the deflection rails are upstream thereof, that particles will enter the flying gap at various trajectories, and the skew angle of the slider will vary as moved across the disk by the actuator. Figures 1 to 3 show the slider incorporated into a head gimbal assembly attached to an actuator arm of a head actuator in a hard disk drive.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 41 to 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boutaghou et al. Boutaghou does not appear to disclose a specific slider flying height.

Official Notice is given that it was notoriously old and well known in the art to have a slider flying height to be less than 15 nm down to less than 3 nm.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the slider of Boutaghou fly at a height of less than 15 nm or down to less than 3 nm. The motivation would have been: such flying heights had been dictated by standard information storage densities at the time the invention was made.

7. Claims 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boutaghou et al in view of Sun et al (U.S. 6,879,464).

As per Claim 4: Boutaghou does not expressly disclose the deflection pads as having a height equal to the depth of the negative pressure cavity, i.e., being at the same height as the uppermost air bearing surface.

Sun discloses having a cavity patch, a rail that lessens negative pressure, in the negative pressure cavity and having a height equal to the depth of the negative pressure cavity (column 7 – lines 5 to 55).

It would have been obvious to have the deflection pads of Botaghou have a height equal to the depth of the negative pressure cavity. The motivation would have been: as taught by Sun, such a height was in the range of heights for allowing pads in the negative pressure cavity be effective at controlling negative pressure. Also, forming

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the deflection pads to have a height equal to the upper ABS height would reduce the number of height levels to which features extend and thus would simplify manufacture.

As per Claim 6: Boutaghou does not expressly disclose a central pad ledge with a height from the central cavity floor less than the uppermost ABS height with the deflection pads having a height equal to that of the ledge.

Sun discloses a central pad ledge with a height from the central cavity floor less than the uppermost ABS height and that his cavity patch may have a height matching that of the ledge.

It would have been obvious to have the center pad 42 of Botaghou have a ledge with a height equal to that of the deflection rails. The motivation would have been: it had been well established in the art, as evidenced by Sun, that a front central pad ledge positive effected airflow approaching the head, and Sun also served as evidence of the advantageousness of having negative pressure cavity pads match the height of such a ledge. Matching the height of slider ABS features reduced manufacturing complexity.

8. Claims 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Boutaghou et al in view of Ueda et al (U.S. 2003/0206374). Boutaghou does not disclose his deflection pads as having a height which is greater than the depth of the negative pressure pocket.

Ueda discloses pads 31 in the negative pressure cavity that have a height greater than the depth of the negative pressure cavity.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have one or more of the deflection pads of Boutaghou have

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heights greater than the depth of the negative pressure cavity. The motivation would have been: such a height for pads served to help prevent the head slider for sticking to the disk.

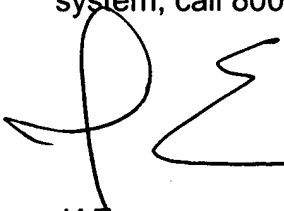
***Allowable Subject Matter***

9. Claims 9 and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jefferson A. Evans whose telephone number is 571-272-7574. The examiner can normally be reached on Monday to Friday, 9:00am to 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa Thi Nguyen can be reached on 571-272-7579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



JAE

February 19, 2007

Jefferson A. Evans  
Primary Examiner  
Art Unit 2627

**JEFFERSON EVANS  
PRIMARY EXAMINER**